<u>C L A I M S</u>

1. A retractable and self-contained mobile repair unit for repairing wells at a plurality of various job sites, said mobile repair unit having a universal capability of servicing an inner pipe string, a sucker rod, and a pump, said mobile repair unit comprising:

a truck frame supported on a plurality of wheels;

an engine coupled to said truck frame and adapted to relocate said truck frame to said various job sites;

a hydraulic pump coupled to said engine;

an air compressor coupled to said engine;

a first transmission coupled between said engine and said plurality of wheels;

a second transmission coupled to said engine;

a variable speed hoist coupled to said second transmission;

an extendible derrick pivotally coupled to said truck frame, said derrick being selectively repositionable to a lowered position and a working position, said derrick being retracted in said lowered position and extended in said working position, said derrick being pointed upward but having a longitudinal centerline that is angularly offset from vertical in said working position;

a block suspended by said hoist at a position that is angularly offset to said centerline of said derrick when said derrick is in said working position, said block being selectively coupled to said inner pipe string, said sucker rod, and said pump, said block in conjunction with

said hoist being adapted to raise and lower said inner pipe string, said sucker rod, and said pump in a substantially vertical direction;

a first hydraulic cylinder coupled to said derrick and said hydraulic pump, said first hydraulic cylinder adapted to extend and retract said derrick;

a second hydraulic cylinder coupled to said derrick and said hydraulic pump, said second hydraulic cylinder adapted to pivot said derrick;

a hydraulic tong~~s~~ ~~coupled~~ coupleable to said hydraulic pump and adapted to apply a torque to at least one of said inner pipe string and said sucker rod, thereby facilitating installation and removal of at least one of said inner pipe string and said sucker rod;

a pneumatic slip ~~coupled~~ coupleable to said air compressor and adapted to selectively grip and release said inner pipe string to facilitate installation of said inner pipe string;

a first transducer providing a first signal that varies as a function of weight applied to said block;

a clock providing a time of day reference;

a memory electrically coupled to said first transducer, said memory storing a first plurality of digital values representative of said first signal, said first plurality of digital values being associated with said time of day reference; and

a modem electrically ~~coupled~~ coupleable to said memory, said modem adapted to link ~~linking~~ said memory to a remote home base to establish a communication link between said remote home base and said plurality of various job sites at which said retractable and self-contained mobile repair unit is working.

2. The retractable and self-contained mobile repair unit as recited in claim 1, further comprising a second transducer spaced apart from said first transducer, said second transducer providing a second signal that varies as a function of weight applied to said block, said first signal deviating from said second signal upon a horizontal cross load being applied to said derrick, whereby a deviation between said first signal and said second signal indicates an imbalance of said derrick, said memory being electrically coupled to said second transducer, said memory storing a second plurality of digital values representative of said second signal, said second plurality of digital values being associated with said time delay reference.

3. The retractable and self-contained mobile repair unit as recited in claim 1, further comprising two spaced apart hydraulic pads supporting said extendible derrick, said two spaced apart hydraulic pads being coupled together by way of an integrator that develops an intermediate pressure that is between a minimum pressure and a maximum pressure at said two spaced apart hydraulic pads, said first transducer being in fluid communication with said intermediate pressure.

4. The retractable and self-contained mobile repair unit as recited in claim 1, further comprising a second ~~third~~ transducer in fluid communication with said hydraulic tongs, said second ~~third~~ transducer providing a second ~~third~~ signal that varies as a function of said torque, said memory being electrically coupled to said second ~~third~~ transducer, said memory storing a second ~~third~~ plurality of digital values representative of said second ~~third~~ signal, said second ~~third~~ plurality of digital values being associated with said time of day reference.

5. The retractable and self-contained mobile repair unit as recited in claim 1, further comprising a tachometer providing a second ~~fourth~~ signal that varies as a function of a speed at which said engine runs, said memory being electrically coupled to said tachometer, said memory storing a second ~~fourth~~ plurality of digital values representative of said second ~~fourth~~ signal, said second ~~fourth~~ plurality of digital values being associated with said time of day reference.

6. The retractable and self-contained mobile repair unit as recited in claim 1, further comprising a hydrogen sulfide gas detector, said hydrogen sulfide gas detector providing a gas detection signal that varies with a varying concentration of a hydrogen sulfide gas, said memory being electrically coupled to said hydrogen sulfide gas detector, said memory storing a second ~~fifth~~ plurality of digital values representative of said gas detection signal, said second ~~fifth~~ plurality of digital values being associated with said time datum reference.

7. A method of remotely distinguishing the raising and lowering of a tubing segment of an inner pipe string, said method comprising the steps of:

applying a load to a hoist system by suspending said tubing segment therefrom, said hoist system including a derrick having a longitudinal centerline;

tilting said derrick to place said longitudinal centerline at an angle relative to vertical;

by way of said hoist system, selectively raising and lowering said tubing segment along a substantially vertical path;

monitoring a first parameter that changes upon said hoist system changing from raising to lowering of said tubing segment;

monitoring a second parameter that varies as a function of said load;

storing a first digital value representing said first parameter;

storing a second digital value representing said second parameter;

communicating said first digital value and said second digital value to a remote location by way of a modem; and

comparing, at said remote location, said first digital value to said second digital value, whereby said first digital value indicates raising and lowering, while said second digital value indicates said tubing segment is coupled to said hoist system.

8. The method of claim 7, wherein said hoist system includes an engine that powers said hoist system, and said first parameter varying as a function of a rotational speed of said engine.

9. A method of remotely determining an existence of a cross-load applied to a derrick of a mobile repair unit for a well, examples of said cross-load including but not limited to wind and leaning removed tubing against said derrick, said method comprising the steps of:

monitoring a first parameter that varies with a first force exerted by said mobile repair unit at a first point, said first force varying as a function of said cross-load;

monitoring a second parameter that varies with a second force exerted by said oil well repair unit at a second point spaced apart from said first point, said second force varying as a function of said cross-load;

storing a first digital value representing said first parameter;

storing a second digital value representing said second parameter;

communicating said first digital value and said second digital value to a remote location by way of a modem; and

comparing, at said remote location, said first digital value with said second digital value to determine a difference therebetween, said difference being an indication that said cross-load exists.

10. A method of later determining from a remote location that an inner tubing string of an oil well was properly stretched to compensate for a subsequent buoyancy effect that alters a distribution of tension along a length of said inner tubing, said method comprising the steps of:

by way of a ~~hoist,~~ lowering said inner tubing string into an outer casing of said oil well;

applying a load to said hoist upon lowering and raising said inner tubing string;

monitoring a parameter that varies as function of said load;

storing a first digital value representing said parameter as said inner tubing string is being lowered into said outer casing;

locking a lower end of said inner tubing string to said outer casing upon lowering said inner tubing to a predetermined depth;

by way of said hoist, raising an upper end of said inner tubing string until said parameter reaches a first predetermined limit, thereby stretching said inner tubing string;

storing a second digital value representing said parameter as said parameter reaches said first predetermined limit;

locking said upper end of said inner tubing string to said outer casing upon said parameter reaching said first predetermined limit; and

communicating said first digital value and said second digital value to said remote location by way of a modem, thereby providing a record that may be referred to after said subsequent buoyancy effect occurs.

11. A method of remotely identifying a time of transition from installing a plurality of steel sucker rods to that of installing a plurality of polymer sucker rods with a steel sucker rod weighing more than a polymer suck rod, said method comprising the steps of:

applying a load to a hoist upon lowering said plurality of steel sucker rods and said plurality of polymer sucker rods into an inner tubing of a well;

monitoring a parameter that varies as a function of said load;

sequentially and cumulatively lowering said plurality of steel sucker rods into said inner tubing;

storing a first plurality of digital values corresponding in number to said plurality of steel sucker rods, said first plurality of digital values representing

said parameter as said plurality of steel sucker rods are being lowered into said inner tubing;

coupling said polymer sucker rod to said plurality of steel sucker rods;

sequentially and cumulatively lowering said plurality of polymer sucker rods into said inner tubing;

storing a second plurality of digital values corresponding in number to said plurality of polymer sucker rods, said second plurality of digital values representing said parameter as said plurality of polymer sucker rods are being lowered into said inner tubing;

communicating said first plurality of digital values and said second plurality of digital values to a remote location by way of a modem; and

observing at said remote location a difference between said first plurality of digital values and said second plurality of digital values which identifies when said plurality of polymer suck rods were being lowered into said inner tubing.

12. The method as recited in claim 11 wherein said polymer sucker rods consists of a fiberglass.